Countryside Landfill
Grayslake, Illinois
Continuous H_2S Monitoring Proposal

Introduction

Residents in neighborhoods and commuters near the Countryside Landfill in Grayslake continue to complain about odors. The odors are suspected to be related to hydrogen sulfide (H_2S) gas originating from landfill cell(s) which received ground drywall waste. Though several approaches to control the odors have been taken, odors continue to be reported. The Lake County Health Department, Illinois EPA and U.S. EPA Region 5 have been working with Waste Management to address the problem. Waste Management continues to take proactive steps to control fugitive odor emissions, including the installation of horizontal gas collection trenches, additional gas collection system capacity, and a new and enhanced flaring system. Though it is anticipated that these controls will be effective in controlling the odors, Waste Management is interested in working with the Agencies to establish a comprehensive H_2S monitoring program to measure the effectiveness of the controls.

Overview

Landfill managers are currently utilizing a hand-held Jerome meter model 631-X to conduct daily surveys for H_2S gas. These surveys are conducted at 13 specific locations along the perimeter of the south expansion area. In addition, a walk-over survey with a flame ionization detector (FID) is conducted weekly by a third party consultant across the site to search for and mark potential sources of odors for repair or placement of additional cover. Though this data may be helpful, this monitoring may not be effective in effectively capturing and characterizing H_2S ambient concentrations. Therefore, the installation of fixed monitors for H_2S to continuously sample and log data is being proposed. Data from the monitors would be downloaded and analyzed in coordination with meteorological, odor complaint and landfill operations data.

The objectives of the monitoring are as follows:

- Establish a baseline of H_2S ambient concentrations at the property line;
- Define fluctuations in H_2S ambient concentrations related to landfill operations, weather, season and time; and
- Determine if controls and gas system enhancements are effective.

Monitoring System Design

Dedicated, fixed monitoring stations equipped with either Jerome or Honeywell single point H_2S monitors will be established at two locations along the eastern fence line and in the predominant downwind locations from the focus area, where it is believed the source of the hydrogen sulfide is found. An additional monitoring station will be placed upwind of the focus area near the main office. A full meteorological station will be placed at the landfill office and monitors for wind direction and speed only will be co-located with the downwind monitors. Data will be downloaded from data loggers or transmitted via telemetry to a computer. It is anticipated that the monitors will be

operated for 6 months to one year. An aerial view of the landfill with proposed locations of fixed monitors is found below.

Countryside Landfill – Proposed H_2S Monitor Locations

Air Monitoring Equipment

There are two options for the air monitoring stations. Both will have the capacity to run through the winter and log data continuously. See Figures 1 and 2 for the two proposed monitor options. The monitors will be placed in secure, enclosed housings which have the capacity to maintain the necessary operating conditions (i.e., warm, dry) as well as prevent damage from extreme weather, wildlife or tampering. The met stations would measure time, wind speed/direction, and temperature/barometric pressure (at the main office location only). All monitors will be calibrated, checked, maintained, serviced and downloaded on a regular basis. Dedicated personnel will be trained and assigned this responsibility along with data reporting and analysis.

Figure 1. Jerome H_2S monitor w/ data logger in protective housing w/ heat lamp to maintain operating temperature and protected intake (left)

Figure 2. Honeywell H_2S with data logger in protective housing w/ heat lamp to maintain operating temperature.

Figure 3. Meteorological Monitoring Station to be optimally established at each monitoring location.

Data Management and Correlations

The data gathered from the stationary H_2S monitoring network will be analyzed and correlated with odor complaints submitted to LCHD, IEPA and USEPA along with meteorological data gathered from the Meteorological Monitoring Station. Additionally, data from private meteorological stations located at a residence in the Prairie Crossing neighborhood (Hedgerow) as well as a farmhouse located to the northeast of the neighborhood will be consulted.

Next Steps

A field visit was conducted to view the proposed locations and to discuss this preliminary concept among the stakeholders. It is envisioned that this monitoring effort would be voluntary and collaborative, with each stakeholder contributing time, input, equipment or services to the program. The effort will also likely involve a public outreach component to make residents aware of the monitoring and encourage accurate and timely reporting of odor complaints to the Lake County Health Department. Equipment, manpower and consulting firms are currently being sourced to identify both available and needed resources to implement the program. The following resources are anticipated to be needed to get the program underway:

Resource	Anticipated Source
Electrical service to monitor site(s)	WMX
Monitoring equipment & housings	EPA
Installation/hardware	WMX
Calibration/Set-up	EPA, contractor
Maintenance/data logging	LCHD, contractor
Data evaluation/reporting	Consultant

Contacts

Mike Kuhn, Lake County Health Department
Bill Franek, Illinois EPA
Mike Hey, Waste Management, Inc.
Jacob Hassan and Chad McEvoy, U.S. EPA Region 5